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EXAR'S XR68C92/192 COMPARED WITH PHILIP'S SCC68692

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1.0 INTRODUCTION

This application note describes the major difference between Exar's XR68C92/192 with Philips's SCC68692. These devices are very similar, with a few hardware, firmware-related and bus timing differences.

1.1 HARDWARE DIFFERENCES

- The Philips SCC68692 and Exar XR68C92/192 are both available in two footprints: 44-pin PLCC and 40-pin PDIP. Additionally, the SCC68692 is available in a 40-pin CDIP and the XR68C92/192 is available in a 44-pin TQFP. In the PLCC and PDIP packages, the Exar and Philips DUARTs are pin-to-pin compatible.

1.2 FIRMWARE DIFFERENCES

All the internal registers in the SCC68692 and XR68C92/192 are identical with only a few exceptions:

- The XR68C92/192 has an additional mode register, Mode Register 0 (Watch dog timer, RX and TX trigger levels and extended baud rate tables), for channels A and B while the SCC68692 does not.
- Since the XR68C92/192 has a larger FIFO than the SCC68692, the selectable transmit and receive trigger levels are different.
- At the address offset of 0x2 and 0xA, the SCC68692 has a read-only BRG Test Register and 1X/16X Test Register, respectively, while these offsets are reserved for the XR68C92/192.
- The XR68C92/192 has a Miscellaneous Command in the CRA and CRB register bits 7-4 that has a different function than the SCC68692. When 0xB is written to the upper nibble of CRA or CRB, the XR68C92/192 sets the MR pointer to MR0, but this has no effect on the SCC68692.

1.3 BUS TIMING DIFFERENCES

- The XR68C92/192 is much faster than the SCC68692. For example, the data access time (from -CS low to data valid) during a read is a maximum of 32 ns for the XR68C92/192, whereas it is a maximum of 175 ns for the SCC68692.

1.4 SUMMARY OF DIFFERENCES

In the table below, some differences between the XR68C92/192 and SCC68692 are summarized.

TABLE 1: DIFFERENCES BETWEEN EXAR’S XR68C92/192 WITH PHILIPS’S SCC68692

DIFFERENCES	XR68C92/192	SCC68692
Data Bus Standard	Motorola	Motorola
Power Supply Operation	3.3 and 5 V	5 V only
Max Operating Current	3 mA @ 3.3 V 6 mA @ 5 V	10 mA @ 5 V
Max Frequency on XTAL1	24 MHz	4 MHz
Max Data Rate	1 Mbps	125 Kbps
Operating Temperature Range	Commercial and Industrial	Commercial and Industrial
Package	44-TQFP, 44-PLCC, 40-PDIP	44-PLCC, 40-PDIP, 40-CDIP
TX FIFO Size	8 (XR68C92) 16 (XR68C192)	1
RX FIFO Size	8 (XR68C92) 16 (XR68C192)	3
TX FIFO Trigger Levels	8, 4, 6, 1 (XR68C92) 16, 8, 12, 1 (XR68C192)	1
RX FIFO Trigger Levels	1, 3, 6, 8 (XR68C92) 1, 6, 12, 16 (XR68C192)	1, 3

1.5 REPLACING THE SCC68692 WITH THE XR68C92/192

You can directly replace the Philips SCC68692 with Exar’s XR68C92/192 without any hardware changes if using either the 44-PLCC or 40-PDIP packages. Hardware changes will be necessary to upgrade to the smaller 44-TQFP package.

Since the XR68C92/192 has a larger Transmit and Receive FIFO, the software will need to be updated to fully utilize the features of the XR68C92/192. The XR68C92/192 allows the hardware designer to choose either a 5 or 3.3 V power supply instead of being limited to a 5 V power supply only. Also, the XR68C92/192 has a lower power consumption than the SCC68692.

The XR68C92/192 can accept up to a 24 MHz frequency on XTAL1 whereas the SCC68692 can only accept up to a 4 MHz frequency. The maximum data transfer rate for the XR68C92/192 is 1 Mbps compared to only 125 Kbps for the SCC68692.

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